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Deliverable title	**D3.1 Experimental plan design of cultivation trials**
Deliverable Lead:	ISA-CM
Related Work Package:	**WP3Sustainable cultivation of thistles**
Related Task:	**T3.1Design of the field experiments**
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Dissemination level	Public
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Start date of project	**01.05.2019**
Duration	36 months (after project end extension: 48 months)
Abstract	Field experiments are carried out in 2 experimental sites, each modeling a Mediterranean scenario with different landscapes and climatic conditions, namely: a central Italian hill area next to the Adriatic coast, with a warm and rainy temperate climate (classified as Csa = hot-summer Mediterranean climate, according to Köppen and Geiger). At least three times as much precipitation in the wettest month of winter as in the driest month of summer, and driest month of summer receives less than 30 mm (1.2 in).) (Coordinator) and an area in East-center of Tunisia (35°54'55"N and 10°33'37"E) with an arid climate (classified as BSh = hot semi-arid climate, according to Köppen and Geiger), which is characterized by scarce rainfall and high temperatures during the whole year (P4). Field experiments have been carried during a 3-year period (2019–2021), under rainfed conditions. Selected thistle species/ecotypes have been compared in a randomized block experimental design with three (Italy) and four (Tunisia) replications.

Versioning and Contribution History

Version	Date	Modified by	Modification reason
v1.0	03/07/2019	Bouthaina Dridi Al Mohandes	First version
V2.0 process	31/07/2019	Bouthaina Dridi Al Mohandes	Comments after peer reviewing

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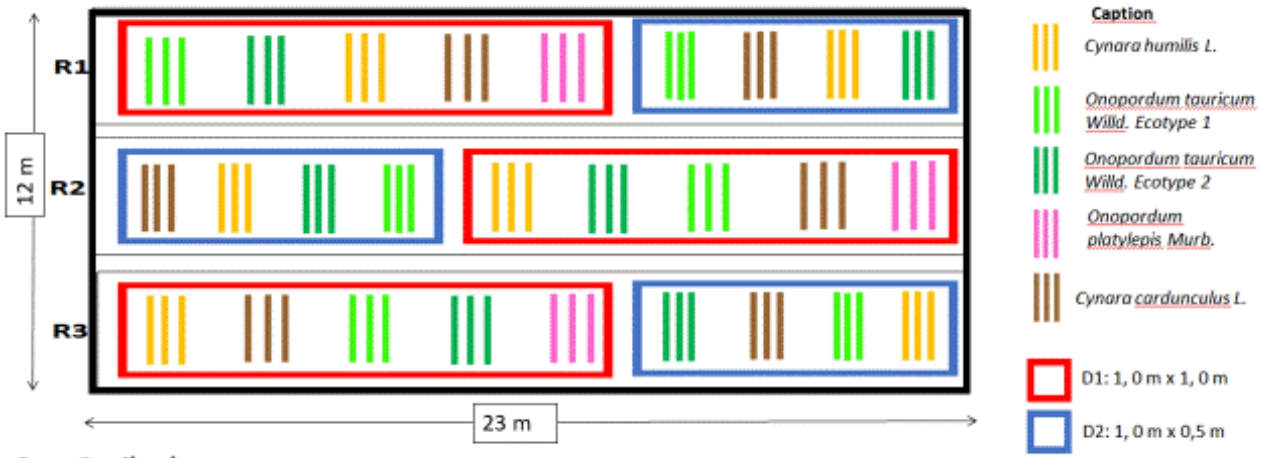
1. Experimental plan design of the cultivation trials

1.1 Italian site

- **Site:** *"Pasquale Rosati"* experimental farm at UNIVPM – Ancona - Italy
- **Compared species:** *Cynara humilis L., Onopordum tauricum Willd (two ecotypes), Onopordum platylepis Murb., Cynara cardunculus L.*
- **Seedbed preparation:** Chisel at a depth of 40 cm, double harrowing before the transplanting date
- **Fertilization:** No fertilization
- **Plant Transplanting:** First April
- **Compared Plant Density** (D): D1 : 1.0 plants m^{-2} (considered as a control) (plant distances: 1.0 m on the row x 1.0mbetween the rows) *VS* D2 : 2.0 plants m^{-2} (plant distances: 1.0 m on the row x 0,50 m between the rows)
- Plot dimension: between 3-6 m^2 (three rows per species)
- **Field experiment dimension:** about 300 m^2
- **Experimental design:** Complete randomized blocks with 3 replications (R)



Rn = Replication

N.B.: *Onopordum platylepis Murb.* will only be tested in D1 due to the limited availability of germinated seed; two ecotypes fo *Onopordum tauricum* Willd. will tested: Ecotype 1 = Visso (Marche Region, Central Italy); Ecotype 2 = Colfiorito (Umbria Region, Central Italy).

1.2 Tunisian site

- **Site:** Experimental plot of the High Institute of Agronomy of Chott-Mariem, Sousse, Tunisia.
- **Compared species:** *Cynara humilis L., Onopordum tauricum Willd (two ecotypes),Onopordum nervosum ssp platylepis Murb., Cynara cardunculus L.*
- **Sowing and Plantlets production:** sowing is carried out in plates filled with peat. At stage 4 true leaves, the seedlings are transplanted into 15 cm diameter pots containing peat where they remain there until the planting stage (15 cm long seedlings having approximately 6 leaves).
- **Plot preparation:** surface tillage by harrowing
- **Fertilization:** No fertilization
- **Plant Transplanting:** End of August 2020
- **Plant Density:** 1 plant m^{-2} (plant distances: 1.0 m on the row x 1.0 m between the rows)
- **Elementary Plot dimension:** 40 m^2 (three rows per elementary plot)
- **Field experiment dimension:** about 640 m^2
- **Experimental design:** Complete randomized blocks with 4 replications (R)